UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

MEMORANDUM:

To: Kable Bo Davis, MS, PM03

From: Rebecca Whalen, Ph.D., Entomologist

Secondary Review: Jennifer Saunders, PhD, Senior Biologist

Date: 6/5/2017

Subject: PRODUCT PERFORMANCE DATA EVALUATION RECORD (DER)

THIS DER DOES NOT CONTAIN CONFIDENTIAL BUSINESS INFORMATION

Note: MRIDs found to be **unacceptable** to support label claims should be removed from the data matrix.

DP barcode: 440398
Decision no.: Rereg
Submission no: Rereg
Action code: Rereg
Product Name: Country Vet Dairy Aerosol CV-ECO Flying Insect Killer
EPA Reg. No or File Symbol: 10807-433
Formulation Type: Aerosol spray
Ingredients statement from the label with PC codes included:

Pyrethrins	0.50%	PC code: 069001
Piperonyl butoxide	5.0%	PC code: 067501

Application rate(s) of product and each active ingredient (lbs. or gallons/1000 square feet or per acre as appropriate; and g/m^2 or mg/cm^2 or mg/kg body weight as appropriate): To protect cattle from stable flies, horse flies, deer flies, house flies, horn flies, mosquitoes and gnats spray 3 seconds/side of animal. To protect from face flies spray face but not eyes. In animal quarters for control of house flies, mosquitoes, gnats, wasps spray at a rate of 1 second/1000 ft3. For flies, mosquitoes wasps and gnats direct mist upward at a rate of 6-10 seconds/100 ft of space. For cockroaches, spiders, ants, centipedes spray hiding plaes and ant trails. Insects must be hit to be killed. For bed bugs spray mattress and bed joints. For fleas spray sleeping quarters.

Use Patterns: For use on cattle, in animal quarters, food processing plants, restaurants, hospitals and other commercial and industrial buildings

I. Action Requested: Reregistration efficacy review requested. MRIDs 44858201 44858202 44858203 44874701 44874702 44874703 44874704 44874705 44874706 44874707 44874708 44878001 44878502 44974704 44974705 45063601 45069301 45069302 45069303 45069304 45104203 45137601 45137602 45137603 and 46709501 are listed on the data matrix for this product and are reviewed here to determine if efficacy claims against pests of public health significance are supported.

II. Background: Product specific data were called in for pyrethrins to support the reregistration of this product.

III. MRID Summary:

MRID 44858201. Laboratory Evaluations of DeltaGard and Esbiol/DeltaGard Water-Based Aerosols as Direct Sprays against Ten Arthropod Pest Species

(1) non-GLP

(2) **Methods:** This study tested a 0.01% deltamethrin aerosol product, and a 0.02% deltamethrin and 0.05% Esbiol combination product as direct surface sprays against the following public health pests: southern fire ant, scorpions, and centipedes. The application rates ranged from 7.3 to 21.9 g per 5 replicates. Unknown numbers of test subjects were placed into 1 pint disposable plastic food storage containers with approximately 5 mm of sand in the bottom. Five replicates of each arthropod group were sprayed until thoroughly wet. Arthropods were scored for initial knockdown and mortality at 15, 30, 60 and 120 minutes and 24 hours. Moribund individuals were considered dead for counts.

(3) **Results:** Efficacy against southern fire ants and centipedes was over 90% at all timepoints from 15 minutes to 14 hours post application for both treatments. Efficacy against scorpions reached 100% at 60 minutes post application for the 0.01% deltamethrin product and 120 minutes post application for the deltamethrin and esbiol combination product.

(4) **Conclusion: Unacceptable.** This study does not support any efficacy claims because there is no untreated control, the rate of application is inconsistent and moribund individuals were considered dead. Finally, all of the formulations tested contained active ingredients not on the product label.

MRID 44858202. Evaluation of SBA/DTM TetraPerm and PyraPerm WBA against German Cockroaches and Cat Fleas

(1) non-GLP

(2) **Methods:** This study tested the following formulations: ShopRite Ant & Roach Killer (0.5% chlorpyrifos); Hotshot Roach & Ant Killer (0.1% TLM, 0.05% BA, 1.0% MGK 264); TetraPerm (0.1% TTM, 0.25% PRM, 0.5% PB), TetraPerm (0.05% TTM, 0.125% PRM, 0.25% PB), PyraPerm (0.1% PYR, 0.2% PRM, 0.5% PB); 0.05% SBA, 0.02% DTM; .0.05% SBA, 0.01% DTM; 0.02% DTM; 0.01% DTM. Active ingredient abbreviations were not described. Control replication was not described. The products were applied directly to German cockroaches and cat fleas at a rate of 1 g per replicate of unknown area. For both species, each treatment was replicated three times with 10 individuals per replicate. Insects were not moved to clean containers after treatment. Mortality was assessed after 24 hrs.

(3) **Results:** All treatments resulted in 100% mortality of fleas and cockroaches after 24 hrs.

(4) **Conclusion:** This study is **unacceptable** because there was no control treatment and insects were not moved to clean containers within 4 hrs post-treatment. Also, a balanced study design is preferred, with at least 5 replicates of ten individuals each tested for both the treatments and the controls.

MRID 44858203. Performance of Esbiol/Deltamethrin Water-Based Aerosol Series against Cat Fleas and German Cockroaches

(1) non-GLP

(2) **Methods:** This study tested for knockdown and residual efficacy water-based aerosol products containing 0.01% and 0.02% deltamethrin, in addition to several other products containing different active ingredients. The other formulations tested were: 0.05% esbiol/0.02% deltamethrin; 0.1% esbiol/0.02% deltamethrin; 0.15% esbiol/0.02% deltamethrin; 0.01% deltamethrin; 0.02% deltamethrin; 0.01% tralomethrin/0.05% d-trans allethrin; 0.03% tralomethrin/0.055 d-trans allethrin; 0.05% pyrethrins/0.2% permethrin/0.25% MGK 264; 0.2% permethrin/0.2% pyrethrins/0.266% PBO. There was no untreated control treatment. To determine the efficacy of a direct spray

against fleas, the products were applied directly to 5 cm diameter carpet pieces at a rate of 1 g per replicate (45.5 g product/ft_2). For efficacy of a direct spray against German cockroaches, the products were applied directly to a substrate of unknown size at a rate of 1 g per replicate. For both species, each treatment was replicated three times with 10 individuals per replicate. Knockdown of fleas was recorded at each minute until 90% knockdown and mortality was assessed at 24 h post exposure. Knockdown of cockroaches was recorded at 30 second intervals until 90% knockdown occurred and mortality was assessed at 24 h post exposure. To test for residual efficacy against fleas, treated (1 g product/replicate) carpets were aged in the lab for 1, 2, and 3 months post treatment. Fleas were inoculated at 1, 2, and 3 months post application and then assessed for knockdown at 1 hour post exposure and mortality at 24 hours post exposure. To test residual efficacy against cockroaches, 1 g product/replicate was applied to vinyl and ceramic tiles of unknown size which were aged for evaluation at 1, 2, and 3 months post application. Cockroaches were exposed to treated ceramic tiles for 1 minute at 1 month post application, and 30 minutes at 2 and 3 months post application and on vinyl tiles at 1 and 2 months post application. Knockdown was measured as KT_{90} and mortality was assessed at 24 h post exposure.

(3) **Results:** In the direct spray treatments with deltamethrin, the KT_{90s} for fleas was between 2.6 and 3.8 minutes and between 7 and 13 minutes for cockroaches. Mortality of both species was 100% at 24 hours post exposure. In the residual studies, deltamethrin killed less than 70% of fleas at 24 hours post exposure for all three months tested. Mortality of cockroaches at 24 hours post exposure to both deltamethrin treatments was over 90% during all three months. For observations at 15 minutes after exposure on the first month, knockdown of cockroaches was less than 20%, but knockdown at 30 minutes or 1 hour was over 90% for the both deltamethrin treatments except the 0.01% treatment at 3 months post application when knockdown was 87%.

(4) **Conclusion: Unacceptable.** This study is not acceptable because there was no control treatment, and the rate applied to ceramic and vinyl tile cannot be calculated because the size of the tiles was not reported. Finally, all of the formulations tested contained active ingredients not on the product label.

MRID 44874701. Residual Evaluation of Water-Based Insecticides for the Control of German Cockroaches.

(1) non-GLP

(2) **Methods:** The study design consisted of four replicates with 10 German cockroach males per replicate. Several formulations were tested: 0.02% deltamethrin; 0.05% tralomethrin; 0.15% permethrin, 0.2% permethrin, 0.25% permethrin, 0.075% cypermethrin, 0.1% cypermethrin, 0.125% cypermethrin, 0.2% chlorpyrifos, 0.25% chlorpyrifos. Only the permethrin treatment will be reviewed here. Treatment was applied to 3.5" x 3.5" glass plates at a rate of 1 gal./1,000^2 and left to dry. Residual efficacy was tested on plates treated one day, seven days, 30 days, 10 weeks and 14 weeks previously. Cockroaches were places on treated plates for one minute then removed to an untreated surface to determine knockdown time and 24 hr mortality. No controls were described.

(3) **Results:** Exposure of German cockroaches to the 0.15% permethrin treated glass plates resulted in >90% mortality on glass treated 14 weeks previously and <90% mortality on glass treated 24-hrs; 1 week, 4 weeks and 10 weeks previously. Exposure of German cockroaches to 0.2% permethrin treated glass plates resulted in >90% mortality on glass treated 24 hrs, 1 week, and 14 weeks previously; and <90% mortality on glass treated 4 weeks and 10 weeks previously.

(4) **Conclusion:** This study is **unacceptable** because no controls were used in the experiment and all of the formulations tested contained active ingredients not on the product label.

MRID 44874702. Comparison of Deltamethrin RTU, Vikor RTU, InterCept, Empire 20, Ford's Dursban, Saga WP, Suspend SC and DeltaDust in Efficacy Tests and Residual Activity in Carpenter Ant Control.

(1) non-GLP

(2) **Methods:** This study tested an unknown rate of a 0.25% dilution of permethrin applied to vinyl tile and concrete block for residual efficacy against carpenter ants. The other formulations tested were 0.02% deltamethrin; 0.05% tralomethrin; 0.25% permethrin; 0.2% chlorpyrifos; 0.25% chlorpyrifos; 0.06% tralomethrin; 0.03% deltamethrin;

0.05% deltamethrin. Efficacy was evaluated at 1, 2, 4, 8, 12, and 16 weeks post application. There was no control treatment used in the study.

(3) **Results:** Exposure of carpenter ants to the vinyl tiles resulted in greater than 90% efficacy through 12 weeks post application, and 87% mortality at 16 weeks post application. Mortality of ants exposed to concrete blocks treated with permethrin was only greater than 90% at 1 week post application.

(4) **Conclusion:** This study is **unacceptable** because a control treatment was not included in the study, and because the rate of product application is unknown and cannot be compared to the label. Finally all of the formulations tested contained active ingredients not on the product label.

MRID 44874703. Evaluation of Residual Treatments of Deltamethrin RTU, Ford's Dursban, Empire 20, InterCept, Saga WP, Suspend SC, Vikor 26% and Vikor RTU on Concrete and Floor Tiles for the Control of Pharaoh Ants, Fire Ants and Crazy Ants.

(1) non-GLP

(2) **Methods:** The study design consisted of five replicates with 10 ants of each species per replicate. Formulations tested were: 0.02% deltamethrin; 0.05% tralomethrin; 0.15% permethrin; 0.2% permethrin; 0.25% permethrin; 0.1% cypermethrin; 0.06% tralomethrin; 0.03% deltamethrin; 0.2% chlorpyrifos; 0.25% chlorpyrifos. Pharaoh ants, fire ants, and crazy ants were exposed for an unknown period of time to vinyl floor tiles (5" x 5") and 15 cm diameter concrete plates that were treated with 0.25% formulation of permethrin at a rate of 1 gal/1000 ft^2. Residual evaluations were conducted at 1, 7, 30, 60, and 90 days. Control results were included but replication was not described.

(3) **Results:** For pharaoh ants, the 0.15% permethrin treatment resulted in >90% mortality on tile at 0 days post treatment and 7 days and 3 months post-treatment; and 0.2% permethrin treatment resulted in >90% mortality on tile at 0 days post treatment and 7 days post-treatment. Control pharaoh ants on tile had <10% mortality on 0 and 7 days post-treatment and >10% mortality at 3 months post-treatment. For pharaoh ants, the 0.15% permethrin treatment resulted in >90% mortality on concrete at day 0 and 3 months post-treatment; and 0.2% permethrin treatment resulted in >90% mortality on concrete at 0 days and 3 months post-treatment. Control pharaoh ants on concrete had <10% mortality on all days post-treatment. For fire ants, the 0.15% and 0.20% permethrin treatment resulted in 100% mortality on tile treated 0 days to 3 months previously. Control fire ants on tile had >10% mortality at 0 days, seven days and 2 months post-treatment. For fire ants, the 0.15% permethrin treatment resulted in >90% mortality on concrete at 0 days, 7 days, 1 month post-treatment; and 0.2% permethrin resulted in >90% mortality on concrete at 0 days and seven days and 1 and 3 months post-treatment. Control fire ants on concrete had >10% mortality at 0 days post-treatment and 2 months post-treatment.

(4) **Conclusion:** This study is **unacceptable** to support efficacy claims against pharaoh ants and fire ants because control replication was not described and exposure times were not given. Insects should be moved to clean containers within 4 hrs post-treatment. Finally all of the formulations tested contained active ingredients not on the product label.

MRID 44874704. Knockdown and Residual Activities of Deltamethrin 0.01% RTU and Esbiol/Deltamethrin WBA Against Red Imported Fire Ants, *Solenopsis invicta*, Pharaoh Ant, *Monomorium pharaonis*, Littler Black Ant, *Monomorium minimum*, False honey Ant, *Prenolepsis imparis*, and *Tetramorium bicarinatum*

(1) non-GLP

(2) **Methods:** This study tested the efficacy of water as a control treatment, a 0.01% deltamethrin RTU product at 1.17 g product/replicate (1.74 g deltamethrin/1000 ft_2), and a esbiol/deltamethrin combination product with unknown percentages of the active ingredients at 0.53 g product/replicate against two ant species considered public health pests, fire ants and pharaoh ants. Each treatment was applied directly to three replicates of 20 individuals on vinyl tiles for each ant species. Ants were evaluated for knockdown and mortality at 5, 10, 15, and 30 minutes post application. The vinyl tiles were saved and used to evaluate residual efficacy of the treatments at one week and one

month post treatment.

(3) **Results:** Within 20 minutes after initial direct treatment of fire ants and pharaoh ants, all ants were dead. In residual tests one week and 30 days after treatment, all ants were dead within 60 minutes of exposure.

(4) **Conclusion: Unacceptable** because all of the formulations tested contained active ingredients not on the product label.

MRID 44874705. Direct Spray Performance of Deltamethrin SC RTU Formulations Against German Cockroaches, Carpenter Ant, and Crickets.

(1) non-GLP

(2) **Methods:** This study assessed the efficacy of a direct application against German cockroaches and carpenter ants of seven different insecticide treatments including a 0.25% permethrin RTU product and an untreated control treatment. Other formulations tested were 0.01% deltamethrin; 0.02% deltamethrin; 0.03% deltamethrin; 0.25% permethrin; 0.50% chlorpyrifos, 0.05% bioallethrin, 0.16% MGK 264, 0.10% piperonyl butoxide; 0.25% chlorpyrifos. Each replicate was sprayed with 1 g of product/replicate. Each treatment was replicated three times, with 10 individuals for German cockroaches and 5 individuals for carpenter ants. Immediately after treatment, cockroaches and ants were transferred to clean containers. Knockdown was assessed every 2 minutes for the first 15 minutes and then every five minutes thereafter until all individuals were knocked down. Mortality was assessed at 24 hrs post treatment.

(3) **Results:** Mortality of German cockroaches and ants treated with 0.25% permethrin was 100% at 24 hrs post application. The KT_{90} for cockroaches was 17.8 minutes and for ants was 2.6 minutes. No control mortality was observed for either species.

(4) **Conclusion:** This study is **unacceptable** because all of the formulations tested contained active ingredients not on the product label.

MRID 44874706. Direct Spray Performance of Deltamethrin SC RTU Formulations against German Cockroaches, Carpenter Ant, and Crickets

(1) **Conclusion: Extraneous Submission.** The study in the MRID is the same study as in MRID 44874705, therefore this MRID was not reviewed.

MRID 44874707. Evaluation of Residual Effects of Water-Based Insecticides Against Cat Fleas

(1) non-GLP

(2) **Methods:** The study design consisted of single replicates with 10 adult cat fleas of mixed sex in each replicate. Formulations tested include the following: A. 0.02% deltamethrin RTU; B. Vikor, 0.05% tralomethrin; C. Intercept, 0.15%, 0.2% and 0.25% permethrin; D. Vikor 26% concentrate, 0.075%, 0.1% and 0.125% cypermethrin; E. Ford's Dursban EC, 0.25% chlorpyrifos; and F. Empire 20, 0.2% chlorpyrifos MC. A 5-cm diameter piece of carpet was placed in a soil sieve and sprayed with insecticide at a rate of 1 gal/1000 ft^2 with a compressed air spray nozzle. The carpet was then placed in a glass cylinder and fleas were transferred to carpet. Knockdown was recorded every minute until 90% of fleas were knocked down. Mortality was calculated at 24 hrs. Treated carpets were aged and residual effects recorded at one week and one, two and three months. No controls were described.

(3) **Results:** Only results from permethrin formulations will be described. Same-day treatment with 0.15% permethrin had a KT90 of 16.5 minutes and 100% mortality after 24 hrs. Carpet treated with 0.15% permethrin one week, one month, two months and three months previously all had <90% mortality after 24 hrs. Same-day treatment with 0.2% permethrin had a KT90 of 20.6 minutes and 96.7% mortality after 24 hrs. Carpet treated with 0.20% permethrin one week, one month, two months and three months previously all had <90% mortality after 24 hrs. Same-day treatment with 0.25% permethrin had a KT90 of 14.3 minutes and 24 hr mortality of 96.7%. Carpet

treated with 0.25% permethrin one week previously had 96.7% mortality after 24 hrs. Carpet treated with 0.25% permethrin one month, two months and three months previously all had <90% mortality after 24 hrs.

(4) **Conclusion:** This study is **unacceptable** because no controls were used, individuals were not removed to untreated containers and were therefore exposed to treatment for 24 hrs, which is unrealistic in a real world scenario, and there was no replication. The study design should have an equal number of treated and untreated replicates and tests should consist of five replicates of ten individuals unless otherwise justified. Finally, all of the formulations tested contained active ingredients not on the product label.

MRID 44874708. Residual Performance of Deltamethrin SC RTU vs. Commercial Products against House Flies.

(1) non-GLP

(2) **Methods:** This study assessed the residual efficacy against house flies of seven different insecticide treatments including a 0.25% permethrin product and an untreated control treatment. The other formulations tested were 0.01% deltamethrin; 0.02% deltamethrin; 0.03% deltamethrin; 4.75% DTM SC (abbreviations not described); 0.25% permethrin; 0.5% chlorpyrifos, 0.05% bioallethrin, 0.16% MGK 264, 0.1% piperonyl butoxide; 0.25% chlorpyrifos. There were three replicates with an unknown number of flies in each replicate. One gram of product was applied to ceramic (121 cm^2) or concrete surfaces (153.9 cm^2). Concrete and ceramic tiles were aged for five months in the laboratory, and then an unknown number of house flies were held on the surfaces under a petri dish for one minute. After one minute, house flies were placed in a clean container and knockdown was recorded at 30 and 60 minutes post exposure and mortality was recorded at 24 hours post exposure. The study states "controls were kept."

(3) **Results:** Mortality of house flies exposed to ceramic tiles treated with the 0.25% permethrin product was 100% and on concrete tiles was 17%. After 30 seconds there was 96% knockdown of house flies on ceramic and 8% knockdown on concrete. No mortality was observed in the control treatment.

(4) **Conclusion:** This study is **unacceptable** because the number of house flies per replicate is unknown and the number of flies used in controls is unknown. A balanced study design is preferred, with at least 5 replicates of ten individuals each tested for both the treatments and the controls. Additionally, efficacy did not reach 90% on concrete tiles. Finally, all of the formulations tested contained active ingredients not on the product label.

MRID 45069302. Residual performance of DeltaGard HPC vs. commercial ready-to-use (RTU) products against German cockroaches on ceramic tile, unpainted plywood, concrete and cat fleas on carpet

(1) non-GLP

(2) **Methods:** The study design consisted of three replicates with ten cockroaches or cat fleas per replicate. This study tested the residual efficacy of 0.01%, 0.02%, and 0.03% formulations of Deltamethrin, a 0.25% formulation of permethrin, chlorpyrifos (0.20% and 0.50%), Bifenthrin (0.05%), and a 0.075% formulation of Diazinon against German cockroaches and cat fleas. A control treatment was included in the study, but was otherwise not described. The products were applied at 1 g/9 cm diameter circle to the ceramic tile, unpainted plywood, and concrete tile to test against German cockroaches and a carpet surface to test efficacy against cat fleas. German cockroaches were exposed monthly to treated surfaces for either 1 minute or 30 minutes starting one day post application through 12 months post application. Testing was done at 1, 2, 3, 4, 5, 6, 9 and 12 months post treatment. Cat fleas were placed in cups with treated fabric surfaces and exposed to surfaces for an unknown period of time. Mortality was recorded at 24 h post exposure for both cockroaches and fleas, and also at 4 days post exposure for cockroaches.

(3) **Results:** Treatment with permethrin resulted in 3% mortality after 24 hrs and 7% mortality of German cockroaches after 96 hrs on concrete aged for one day. Treatment with permethrin resulted in 100% mortality at 24 hrs and 96 hrs post-treatment of German cockroaches that were exposed for 30 minutes plywood aged for one month. Treatment with permethrin resulted in >90% mortality at 24 hrs post-treatment of German cockroaches that were exposed for 1 minute to ceramic aged for one month. Treatment with permethrin resulted in >90% mortality at 24 hrs and 96 hrs post-treatment of German cockroaches that were exposed for 1 minute to ceramic aged for 2, 3, 4,

5, 6, 9 and 12 months. Treatment with permethrin resulted in >90% mortality at 24 hrs post-treatment of fleas that were exposed for an unknown amount of time to surfaces treated 2 months and four months previously. All other treatments resulted in <90% mortality of German cockroaches and fleas at either 24 hrs or 96 hrs post-treatment. Control mortality was reported to be <10% for all tests.

(4) **Conclusion:** This study is **unacceptable** because controls were not described and replication was insufficient. Typically, a balanced study design is preferred, with at least 5 replicates of ten individuals each tested for both the treatments and the controls. Finally, all of the formulations tested contained active ingredients not on the product label.

MRID 44878001. Evaluation of 0.05% Esbiol/0.02% Deltamethrin and 0.01% Deltamethrin Water-Based Aerosols Applied to Glass Plates Against Boxelder Bugs, *Leptocoris trivattatus*, Mosquitoes, *Aedes aegypti*, and Deer Ticks, *Ixodes scapularis*

(1) non-GLP

(2) **Methods:** This study tested the efficacy against deer ticks and mosquitoes of a 0.01% deltamethrin water-based aerosol product and a 0.05% Esbiol/0.02% deltamethrin product applied to glass plates. There was no untreated control group. The 0.01% deltamethrin product was applied at 0.92 g deltamethrin/1000 ft^2 to two replicates for each species, 0.092 g deltamethrin/1000 ft^2 to two replicates for mosquitoes, and 0.23 g deltamethrin/1000 ft^2 to two replicates for deer ticks. After application, 10 nymphal deer ticks were placed directly onto each plate for 1 minute after which ticks were placed into clean containers and observed for mortality at 10 minutes and 24 hours post exposure. For mosquitoes, 17-20 unfed adult female *Aedes aegypti* mosquitoes were held on the treated glass plate for 2 minutes and then transferred to clean containers and observed for knockdown and mortality at 10 min., 30 min., 12 hours, and 24 hours post exposure.

(3) **Results:** All nymphal deer ticks exposed to deltamethrin treated plates were dead within 10 minutes of exposure. On plates treated with 0.092 g deltamethrin/1000 ft^2 mosquito mortality was 64.7% at 12 hours post exposure and was not recorded at 24 hours post exposure. On plates treated with 0.92 g deltamethrin/1000 ft^2, 90% knockdown of mosquitoes occurred at 10 minutes post exposure and 90% mortality was recorded at 12 hours post exposure.

(4) **Conclusion: Unacceptable** because there was no untreated control, replication was not adequate, and adult ticks were not tested. Finally, all of the formulations tested contained active ingredients not on the product label.

MRID 44878502. Laboratory Performance of DeltaGard HPC as a Direct Spray against Oriental Cockroaches, Termites (*Reticulitermes flavipes*), Ants (*Crematogaster spp.*), Rice Weevils and Lesser Grain Borers.

(1) non-GLP

(2) **Methods:** In this study, a 0.01% deltamethrin ready to use product was tested for efficacy of a direct application of 1 g product (0.0001 g deltamethrin/replicate of unknown size) against Oriental cockroaches and termites (*Reticulitermes flavipes*). There were five replicates for both species and each replicate consisted of 5 cockroaches or 10 termites. Immediately after application, insects were moved to clean containers and observed for knockdown at 15, 30, and 60 minutes after treatment. Mortality was assessed at 24 hours post treatment and 5 days post treatment. There was no untreated control in the experiment.

(3) **Results:** At 15 minutes post treatment 94% of termites were knocked down; however, for cockroaches > 90% knockdown did not occur until 60 minutes post treatment. At 24 hours post treatment mortality of cockroaches and termites was 100%.

(4) **Conclusion: Unacceptable** because there was no untreated control treatment. Finally, all of the formulations tested contained active ingredients not on the product label.

MRID 44974704. Performance of 0.01% DeltaGard Water-Based Aerosol Direct Sprays against American, Oriental cockroaches and stored product pests

(1) non-GLP

(2) **Methods:** In this study, a 0.01% deltamethrin ready to use product and an untreated control were tested for efficacy of a direct application of 1 g product (0.0001 g deltamethrin/replicate of unknown size) against American and Oriental cockroaches. There were five replicates for both species and each replicate consisted of 5 cockroaches. Immediately after application, insects were moved to clean containers and observed for knockdown at 15 and 30 minutes after treatment. Mortality was assessed at 24 hours post treatment.

(3) **Results:** At 30 minutes post application 100% knockdown of both cockroach species was observed. At 24 hours post application, combined moribund and dead individuals of both cockroach species was 100%. There was no mortality in the untreated control group.

(4) **Conclusion: Unacceptable** because moribund and dead individuals are combined in the mortality count and all formulations tested contained active ingredients not on the product label.

MRID 44974705. Evaluation of Esbiol/Deltamethrin and Deltamethrin CIKs against Lone Star Ticks.

(1) non-GLP

(2) **Methods:** In this study, a 0.01% deltamethrin water-based aerosol product, a 0.05% S-bioallethrin/0.02% deltamethrin product, and an untreated control were tested for efficacy against adult lone star ticks using a direct application sprayed until wet. There were three replicates with 7 individual ticks for each treatment. Immediately after application, ticks were moved to clean containers and observed for knockdown at 15 and 30 minutes after treatment. Mortality was assessed at 24 hours post treatment.

(3) **Results:** All ticks in the boxes treated with the 0.01% deltamethrin product were dead within 20 minutes of treatment and over 90% of ticks were dead in boxes treated with the 0.05 S-bioallethrin/0.02% deltamethrin product. No mortality was observed in the control treatment.

(4) **Conclusion:** This study is **unacceptable** because all formulations tested contained active ingredients not on the product label. Additionally for a tick claim data should be provided showing efficacy against brown dog tick or American dog tick and blacklegged tick in addition to lone star tick.

MRID 45063601. Laboratory Performance of Deltamethrin Formulations (WP, WDG, RTU, SC) Saga WP, Permanone Dust and Drione Dust against Adult, Free-Flying Yellow Jacket Wasps (*Vespula spp.*)

(1) non-GLP

(2) **Methods:** The study design consisted of five replicates with 10 yellowjackets per replicate. The number of controls used was not described. Several formulations were tested: Drione Dust (1% pyrethrins, 10% piperonyl butoxide, 40% amorphous silica gel), Suspend 5 SC (0.01% deltamethrin); K-Othrine 5 WP (0.01% deltamethrin); DelatGard 25% WDG (0.01% deltamethrin); Saga 40 WP (0.03% tralomethrin); Tempo SC Ultra (0.025% cyfluthrin); DeltaGard HPC (0.01% deltamethrin); DeltaGard HPC (0.03% deltamethrin); Permethrin 0.15% Dust (0.15% permethrin) and Sevin 5% Dust (5% carbaryl). Wasps were placed in steel can with a steel mesh bottom. Dust was applied using hand-held bulb dusters. Two or three squeezes of the bulb were directed into the steel cans. The amount of dust applied ranged from 0.2-0.7 grams. Knockdown was observed starting at one minute. Mortality was recorded at 24 hrs.

(3) **Results:** Treatment produced 100% morality at 24 hrs and 100% knockdown after 15 minutes. Control mortality was 8%.

(4) **Conclusion:** This study is **unacceptable** because the number of controls used was not described and insects

were not moved to clean containers within 4 hrs post-treatment and were therefore exposed to treatment for 24 hrs, which is not realistic in a real world scenario. Additionally, knockdown claims for stinging hymenoptera should show >90% knockdown within 10 seconds of treatment. Finally, all formulations tested contained active ingredients not on the product label.

MRID 45069301. Performance of DeltaGard HPC and Ortho Home Defense against lone star ticks

(1) non-GLP

(2) **Methods:** This study tested the efficacy of a direct application of a 0.01% deltamethrin product, and a 0.05% bifenthrin product and an untreated control against lone star ticks. Ten lone star ticks were placed into 5 inch x 5 inch boxes, and five replications of ten ticks were sprayed per treatment. Products were applied directly to ticks at 1 g of product per replicate, equivalent to a rate of 0.57 g deltamethrin/1000 ft^2 for the tested deltamethrin product. Ticks were not moved to clean containers after treatment. The number of ticks alive was recorded at 10 minutes, 1 hr, 3 hrs and 24 hrs post-treatment.

(3) **Results:** All ticks were dead in both insecticide treatments within three hours of application. Mortality in the control treatment was less than 10%.

(4) **Conclusion:** This study is **unacceptable** because all formulations tested contained active ingredients not on the product label. Also for any efficacy claims against ticks, data must also be submitted to show efficacy against blacklegged ticks and dog ticks. Also, individuals were not removed to untreated containers and were therefore exposed to treatment for 24 hrs, which is unrealistic in a real world scenario; insects should be removed to untreated containers no more than 4-hrs post-exposure

MRID 45069302. Residual Performance of DeltaGard HPC and Ortho Home Defense against Lone Star Ticks

(1) non-GLP

(2) **Methods:** This study tested the residual efficacy of 0.01%, 0.02%, and 0.03% formulations of Deltamethrin, a 0.25% formulation of permethrin, chlorpyrifos (0.20% and 0.50%), Bifenthrin (0.05%), and a 0.075% formulation of diazinon against German cockroaches and cat fleas. A control treatment was included in the study, but was otherwise not described. The products were applied at 1 g/9 cm diameter circle to the ceramic tile, unpainted plywood, and concrete tile to test against German cockroaches and a carpet surface to test efficacy against cat fleas. German cockroaches were exposed monthly to treated surfaces for either 1 minute or 30 minutes starting one day post application through 12 months post application. Cat fleas were placed in cups with treated fabric surfaces and exposed to surfaces for an unknown period of time. Mortality was recorded at 24 h post exposure for both cockroaches and fleas, and also at 4 days post exposure for cockroaches.

(3) **Results:** The 0.01%, 0.02%, and 0.03% deltamethrin treatments did not achieve 90% mortality through 6 months post application. However, at 9 months post application, mortality of fleas in the 0.01% deltamethrin treatment was 87% and in the 0.02% and 0.03% treatments flea mortality was 100%. At 12 months post application, mortality of fleas was again under 90% in the 0.01% and 0.02% deltamethrin treatments and was 92% in the 0.03% deltamethrin treatment. Mortality in the control treatment was 10% or less for both German cockroaches and fleas for all test dates except months 4-6 for fleas when mortality in the control treatment was 20%.

(4) **Conclusion: Unacceptable** because efficacy was not over 90% except for a single occurrence at 9 months post application and all formulations tested contained active ingredients not on the product label.

MRID 45069303. Evaluation of DeltaGard HPC Applied as Deposit to Glass Plates against Adult *Aedes aegypti* Mosquitoes.

(1) non-GLP

(2) **Methods:** In this study, a 0.01% deltamethrin water-based aerosol product (application rate: 0.93 g deltamethrin/1000 ft), a positive control (EPA Reg. No. 4822-284), and an untreated control were tested for residual efficacy against adult *Aedes aegypti* mosquitoes. There were five replicates with 20 mosquitoes for each treatment. Within one hour of application, mosquitoes were exposed to treated glass plates for one minute and then transferred to clean containers and observed for knockdown and mortality at 5, 10, 30, and 60 minutes, and 24 hours after treatment.

(3) **Results:** Knockdown of mosquitoes was over 90% at 5 minutes post exposure in the 0.01% deltamethrin treatment and 10 minutes post exposure in the positive control treatment. Mortality of mosquitoes at 24 hours post exposure in both treatments was 100%, but mortality in the untreated control was 11.9% at 24 hours post treatment.

(4) **Conclusion: Unacceptable** because mortality of mosquitoes in the control treatment was over 10%, and all formulations tested contained active ingredients not on the product label.

MRID 45069304. Evaluation of DeltaGard HPC Applied as Deposit to Glass Plates against Nymphal *Ixodes scapularis* Ticks

(1) non-GLP

(2) **Methods:** In this study, a 0.01% deltamethrin water-based aerosol product (application rate: 0.93 g deltamethrin/1000 ft), a 0.05% bifenthrin product, and an untreated control were tested for residual efficacy against nymphal *Ixodes scapularis* ticks. There were five replicates with 10 ticks for each treatment. Within one hour of application, ticks were exposed to treated glass plates for one minute and then transferred to clean containers and observed for knockdown and mortality at 15, 30, and 60 minutes, and 24 hours after treatment.

(3) **Results:** All ticks exposed to plates treated with deltamethrin or bifenthrin were knocked down at 15 minutes post exposure and dead at 24 hours post exposure. Mortality of ticks in the control treatment at 24 hours post exposure was 12.2%.

(4) **Conclusion: Unacceptable.** This study does not support efficacy claims against ticks because mortality of ticks in the control treatment was over 10%, and all formulations tested contained active ingredients not on the product label. Finally, adult ticks should be tested for any tick claim and testing should be done with lone star tick and either brown dog tick or American dog tick in addition to blacklegged tick

MRID 45104203. Performance of Suspend SC, DeltaGard WP, DeltaGard WDG, DS505 (DeltaGard/Esbiol Aerosol) and DeltaGard HPC as Direct Sprays against the Stable Fly, *Stomoxys calcitrans*

(1) non-GLP

(2) **Methods:** This study tested three water-based 0.0025% deltamethrin products applied via a trigger sprayer at 2 gallons/1000 ft^2 (approx.: 0.023 g deltamethrin/1000 ft^2 assuming a density of 8 lb/gal), a 0.01% deltamethrin waterbased aerosol product (application rate: 1.47 g deltamethrin/1000 ft), several positive controls (0.025% cyfluthrin; 0.005% deltamethrin/0.05% s-bioallethrin/0.5% piperonyl butoxide; 0.143% d-grans allethrin/0.143% phenothrin/0.5% piperonyl butoxide; 0.05% bifenthrin), and an untreated control for efficacy of a direct application against stable flies. The experiment was performed five times with four replicates of 15 flies each time for a total of 300 flies per treatment. At one hour after application, flies were transferred to clean containers and observed for knockdown at 15 and 30 minutes post treatment, and mortality at 24 hours after treatment.

(3) **Results:** Knockdown was 100% at 15 minutes post application and mortality was also 100% at 24 hours post application in all deltamethrin treatments. Control mortality was less than 10%.

(4) **Conclusion:** This study is **unacceptable** because all formulations tested contained active ingredients not on the product label.

MRID 45137601. Direct Spray of American Cockroaches (*Periplaneta americana*) with 0.01% DeltaGard Home Pest Control (HPC) and 0.05% (Bifenthrin) Ortho's Home Defense Ready to Use (RTU)

(1) non-GLP

(2) **Methods:** This study tested the efficacy of a 0.01% deltamethrin RTU product (0.19 g deltamethrin/1000 ft^2), a 0.05% bifenthrin product (2.3 g bifenthrin/1000 ft^2), and an untreated control for efficacy of a direct application against American cockroaches. There were six replicates of five cockroaches each for the insecticide treatments and two replicates of ten cockroaches for the control treatment. Knockdown was observed for the first 15 minutes and at 30 and 60 minutes post application, and mortality was assessed at 24 hours post application. Insects were not moved to clean containers after treatment.

(3) **Results:** The deltamethrin product knocked down 100% of cockroaches within 15 minutes of application, and both treatments killed 100% of cockroaches at 24 hours post application. There was no control mortality.

(4) **Conclusion:** This study is **unacceptable** because all formulations tested contained active ingredients not on the product label. Also, individuals were not removed to untreated containers and were therefore exposed to treatment for 24 hrs, which is unrealistic in a real world scenario; insects should be removed to untreated containers no more than 4-hrs post-exposurev

MRID 45137602. Performance of 0.05% Esbiol/0.02% Deltamethrin and Deltamethrin against House Flies, Carpenter Ants, and House Crickets

(1) non-GLP

(2) **Methods:** In this study, a 0.01% deltamethrin water-based aerosol product (1 g product/replicate), a 0.05% Esbiol/0.02% deltamethrin product, and an untreated control were tested for efficacy of a direct application against house flies and carpenter ants. The number of replicates for each species and treatment is not provided. Flies were retained in the treated cups for the duration of the study, while ants were moved to clean containers immediately after application. For house flies, knockdown was assessed every 30 seconds, and for carpenter ant knockdown was assessed every minute. For both species mortality was assessed at 24 hours post application.

(3) **Results:** For house flies, the KT_{90} for the deltamethrin treatment was 8.1 minutes and for carpenter ants the KT_{90} was 6.5 minutes. Mortality for both species in both insecticide treatments was 100% at 24 hours post application. No control mortality was observed for either species.

(4) **Conclusion:** This study is **unacceptable** because the number of replicates used in the study was not provided, and flies were retained in the cup for 24 hours which is unrealistic. Insects should be moved to clean containers within 4 hrs post treatment. Finally, all formulations tested contained active ingredients not on the product label.

MRID 45137603. 1991 Roussel Bio Corporation Treated Panel Research in Indiana for Controlling House Flies and Stable Flies

(1) non-GLP

(2) **Methods:** In this study, a 0.01% deltamethrin product, a 0.03% deltamethrin product, and two tralomethrin products were tested for residual efficacy against house flies and stable flies at a rate of 1 gallon product/1000 ft^2. An untreated control group was included in the experiment. Treatments were applied to 12 x 12 inch plywood squares aged for two months. There were six replications of each treatment for each species. Each replicate consisted of 10 to 20 flies of a single species. Flies were exposed to treated panels for one hour. The study does not specify the timepoint after exposure when flies were observed for mortality. House flies were exposed to treated panels at 1, 2, 4, 8, 12, 16, and 20 weeks post application, and stable flies were exposed at 10, 13, and 18 weeks post application.

(3) **Results:** Both deltamethrin treatments killed 100% of both species of flies exposed to treated panels through 20

weeks post application for house flies and 18 weeks post application for stable flies. The 0.01% tralomethrin product did not provide 90% control until 8 weeks post application at which point mortality of both species was 100% through 20 weeks for house flies and 18 weeks for stable flies. The 0.03% tralomethrin product killed 100% of both fly species through the duration of the study. Control mortality was acceptable.

(4) **Conclusion:** This study is **unacceptable** because we do not know at what time post treatment the study staff assessed flies for mortality. Additionally, all formulations tested contained active ingredients not on the product label.

MRID 46709501. Residual activity of DeltaGard and Esbiol/DeltaGard water-based aerosols against German cockroaches

(1) **Methods:** The number of replicates used, the number of individuals tested, and control replication or use were not described therefore this study will not be reviewed.

(2) **Conclusion:** This study is **unacceptable** because the number of replicates and the number of individuals per replicate were not described and no controls were described.

IV. EXECUTIVE DATA SUMMARY:

The data submitted does not support efficacy claims against any public health pests.

V. LABEL RECOMMENDATIONS:

(1) Make the following changes in the Directions for Use:

- Delete directions for use against stable flies, horse flies, deer flies, house flies, horn flies, mosquitoes, gnats, face flies, flies, wasps, cockroaches, spiders, ants, centipedes, bed bugs, fleas (ant and spider DFU can remain if ants are qualified by "except fire, harvester, pharaoh, and carpenter ants" and spiders are qualified by "except black widow and brown recluse spiders")

(2) The following marketing claims are acceptable:

- Any claims against non-public health pests; note that all general claims should be modified to specify listed bugs
- Kills and repels: listed flying and crawling insects

(3) The following marketing claims are unacceptable:

- Kills and repels: Stable flies, horse flies, face flies, deer flies, house flies, horn flies, mosquitoes and gnats
- All marketing claims related to stable flies, horse flies, deer flies, house flies, horn flies, mosquitoes, gnats, face flies, flies, wasps, cockroaches, spiders, ants, centipedes, bed bugs, fleas (note that ant and spider marketing claims may be retained if they are modified to include the species exclusions as described above)

(4) The following MRIDs should be removed from the data matrix, as they are classified as "unacceptable" to support the product: 44858201 44858202 44858203 44874701 44874702 44874703 44874704 44874705 44874706 44874707 44874708 44878001 44878502 44974704 44974705 45063601 45069301 45069302 45069303 45069304 45104203 45137601 45137602 45137603 and 46709501

(5) Note to PM: Data was submitted for the following pests not on the product label: lone star tick, blacklegged tick, scorpion, termites. Data was not submitted for the following pests on the product label: horse flies, deer flies, horn flies, gnats, face flies, spiders, centipedes, bed bugs